# ICF-450L

# SERVICE MANUAL

*AEP Model*
*UK Model*

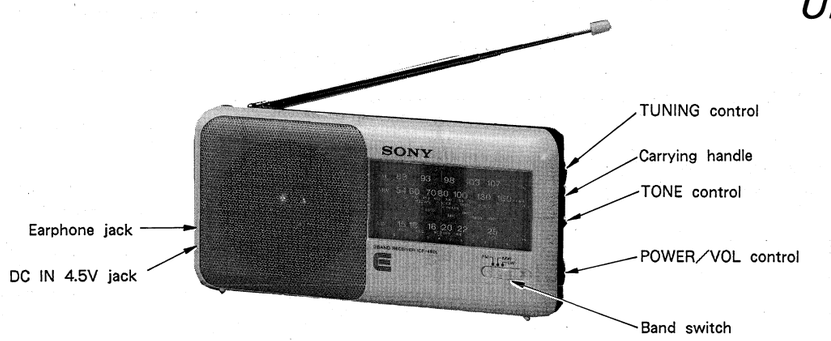



PHOTO : ICF-450L UK Model (WHITE Type)

CABINET COLOR : WHITE, BLACK, RED.

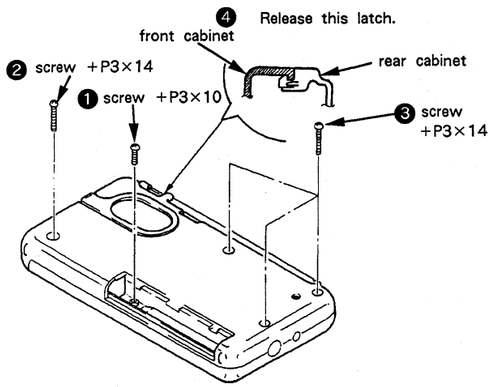
## SPECIFICATIONS

| | |
|---|---|
| Frequency range | FM: 87.6 – 107.5 MHz<br>MW: 531 – 1,602 kHz<br>LW: 153 – 255 kHz |
| Antennas | FM: Telescopic antenna<br>MW/LW: Built-in ferrite bar antenna |
| Speaker | Approx. 7.7 cm (3 inches) dia. |
| Power output | 200 mW (at 10% harmonic distortion) |
| Output | Earphone jack (minijack) |
| Power requirements | 4.5 V DC<br>Three R6 (size AA) batteries<br>DC IN 4.5 V jack accepts:<br>Sony AC-D3 AC power adaptor (optional) available in AEP and French models for use on 220 V AC, 50 Hz<br>Sony AC-D3 AC power adaptor (optional) available in UK model for use on 240 V AC, 50 Hz |
| Battery life | Approx. 35 hours with Sony batteries SUM-3 (NS) |
| Dimensions | Approx. 196 x 95.5 x 39.5 mm (w/h/d)<br>($7\frac{3}{4}$ x$3\frac{7}{8}$x$1\frac{9}{16}$ inches)<br>incl. projecting parts and controls with the carrying handle pushed in |
| Weight | Approx. 410 g (14 oz), incl. batteries |

## SECTION 1
## DISASSEMBLY

**Note :** Follow the disassembly procedure in the numerical order given.

**Rear case removal**




FM/MW/LW 3BAND RECEIVER

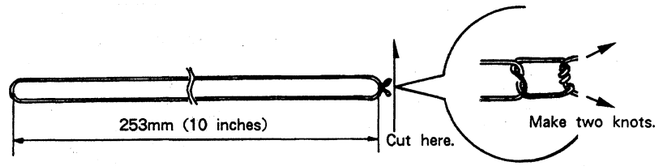
SONY®

MICROFILM



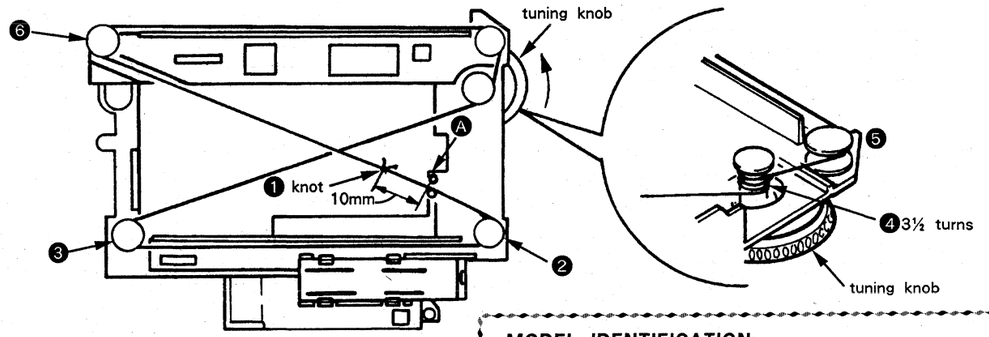
## SECTION 2
## DIAL CORD STRINGING

**2-1. Preparation**



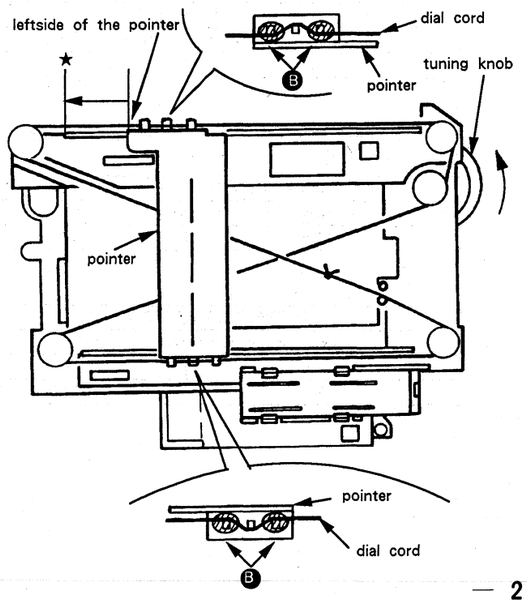

**2-2. Stringing**

1. Turn the tuning knob fully counterclockwise. (frequency : lowest)
2. Set a knot to the position 10mm apart from portion Ⓐ.
3. String the dial cord in the numerical order given.

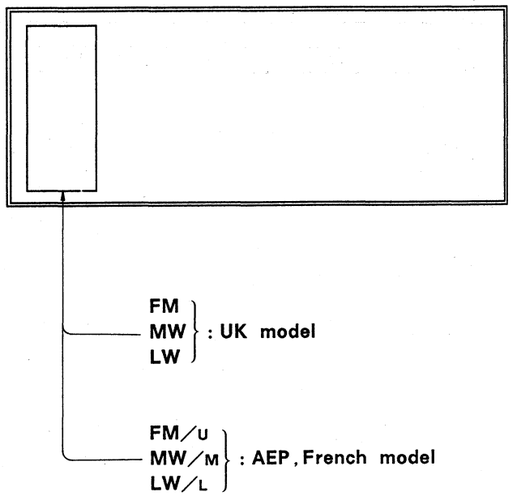



**2-3. Dial Pointer Installation**

1. Turn the tuning knob fully counterclockwise.
2. Install the pointer to the dial cord.
3. Set the leftside of the pointer to ★ mark.
4. Secure the portion Ⓑ of the pointer with locking compound.



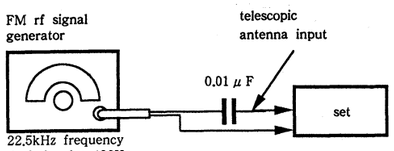

**MODEL IDENTIFICATION**
–Dial Scale–

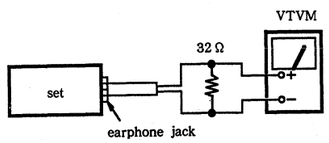


# SECTION 3
# ELECTRICAL AJUSTMENTS

## FM Section

BAND SWITCH : FM


FM rf signal generator
telescopic antenna input
0.01 μ F
set
22,5kHz frequency deviation by 400Hz signal
Output level : as low as possible



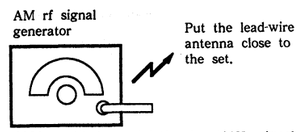

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustmens should be finally done by the trimmer capacitors.

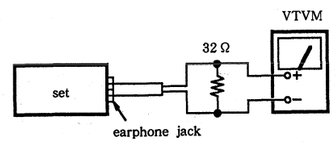
| FM FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| L4 | 86,5MHz |
| CT3 | 109,5MHz |

| FM TRACKING ADJUSTMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| L3 | 86,5MHz |
| CT2 | 109,5MHz |

## MW/LW Section

BAND SWITCH : MW/LW


AM rf signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400Hz signal
Output level : as low as possible




- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustmens should be finally done by the trimmer capacitors.

| MW FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| 520kHz | L5 |
| 1,650kHz | CT4 |

| MW TRACKING ADJUSTMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| 620kHz | L2-1 |
| 1,400kHz | CT1 |

| MW/LW IF ALIGNMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| 455kHz | T1 |

Note :

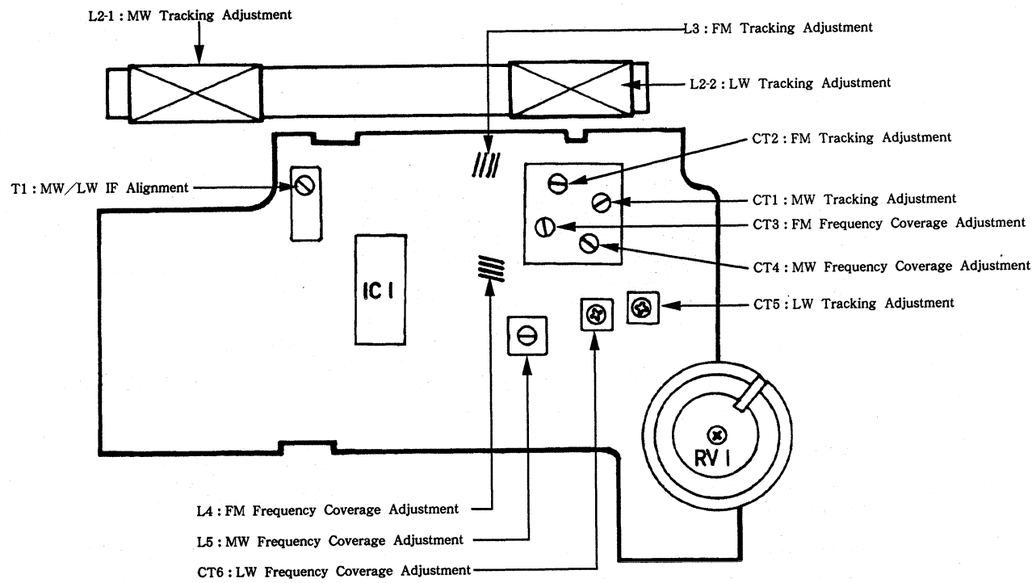
LW adjustments should be made after making MW adjustment.

| LW FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| 145kHz | CT6 |

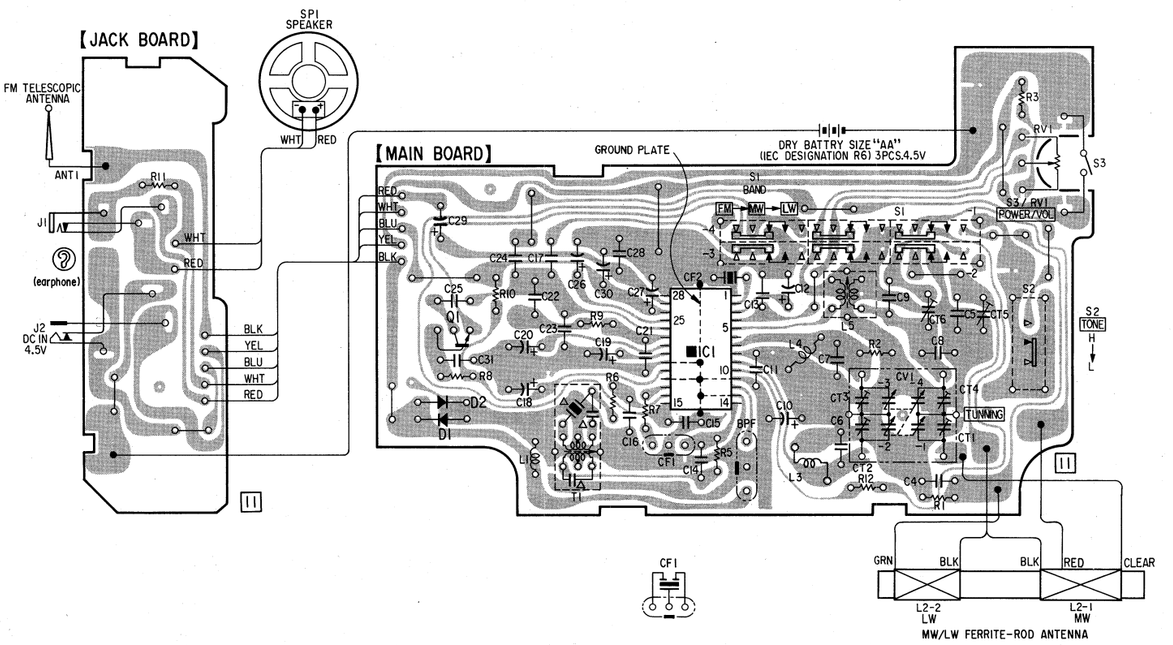
| LW TRACKING ADJUSTMENT | |
|---|---|
| Adjust for a maximum reading on VTVM. | |
| 160kHz | L2-2 |
| 260kHz | CT5 |



## – Adjustment Parts Location Diagrams (main board) –


L2-1 : MW Tracking Adjustment
L3 : FM Tracking Adjustment
L2-2 : LW Tracking Adjustment
CT2 : FM Tracking Adjustment
T1 : MW/LW IF Alignment
CT1 : MW Tracking Adjustment
CT3 : FM Frequency Coverage Adjustment
CT4 : MW Frequency Coverage Adjustment
IC 1
CT5 : LW Tracking Adjustment
RV 1
L4 : FM Frequency Coverage Adjustment
L5 : MW Frequency Coverage Adjustment
CT6 : LW Frequency Coverage Adjustment

## 4-1. PRINTED WIRING BOARDS




**Note:**

- ○——: parts extracted from the component side.
- ●——: parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⊡ indicates side identified with part number.

**Note on replacing ceramic filter (CF1 and CF2).**
Two ceramic filters which have the same center frequency are included in the replaceable part of ceramic filters (Part No. 1-567-097-61).

- For CF1 (FM IF) ····· 3 leads
- For CF2 (FM discriminator) ····· 2 leads

When replacing CF1 or CF2, be sure to replace both of them with new parts.

**Note on Schematic Diagram:**

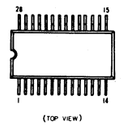
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- Switch

| Ref. No. | Switch | Position |
|---|---|---|
| S1 | BAND | FM |
| S2 | TONE | H |
| S3 | POWER | OFF |

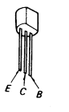
- B+ : B+ Line
- Power voltage is dc 4.5V and fed with regulated dc power supply from external power voltage jack.
- Voltage are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : MW/LW
- Voltages are taken with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM

## 4-2. SEMICONDUCTOR LEAD LAYOUTS

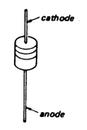
**CXA1019M**



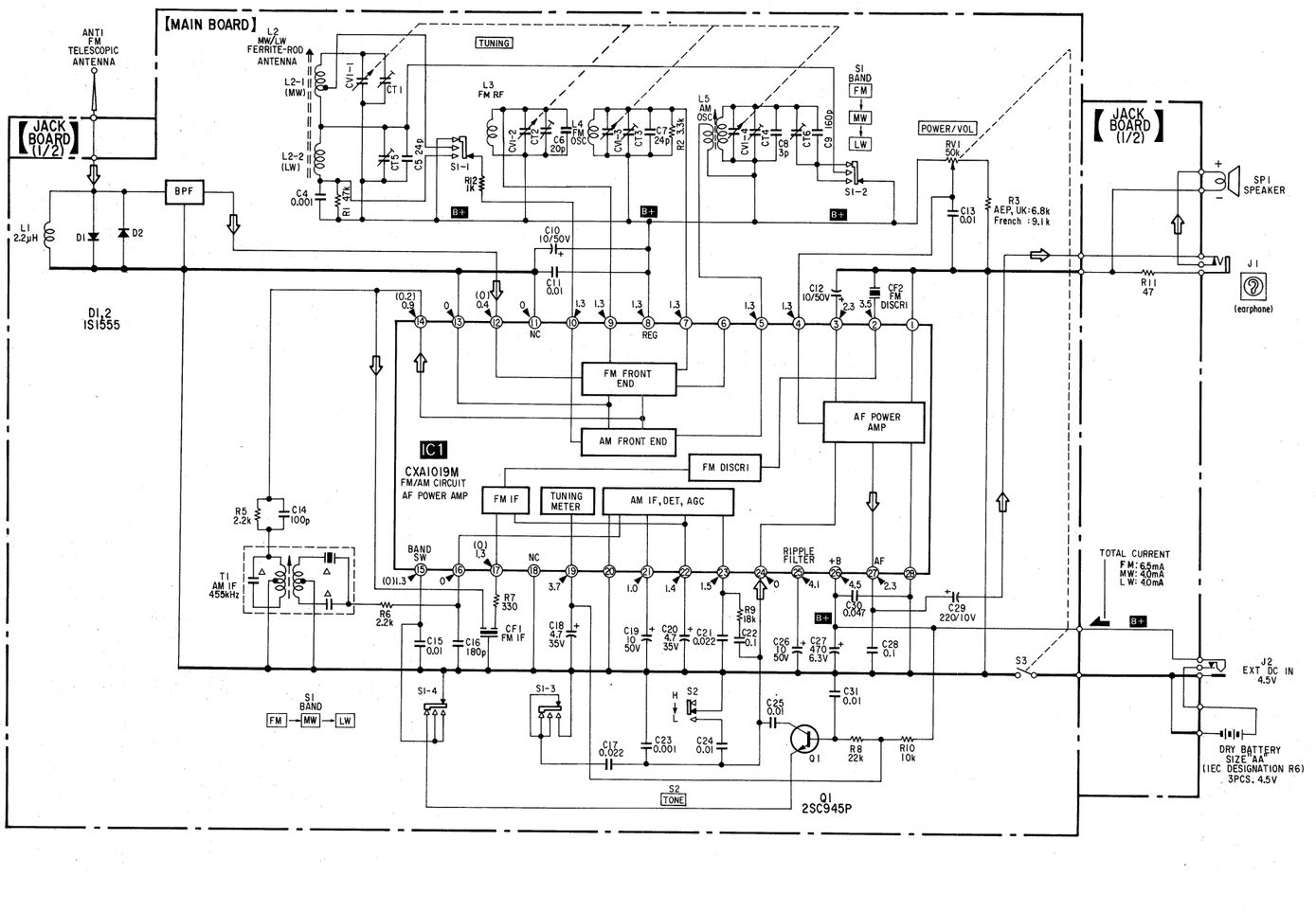

**2SC945-P**




**1S1555**




## 4-3. SCHEMATIC DIAGRAM

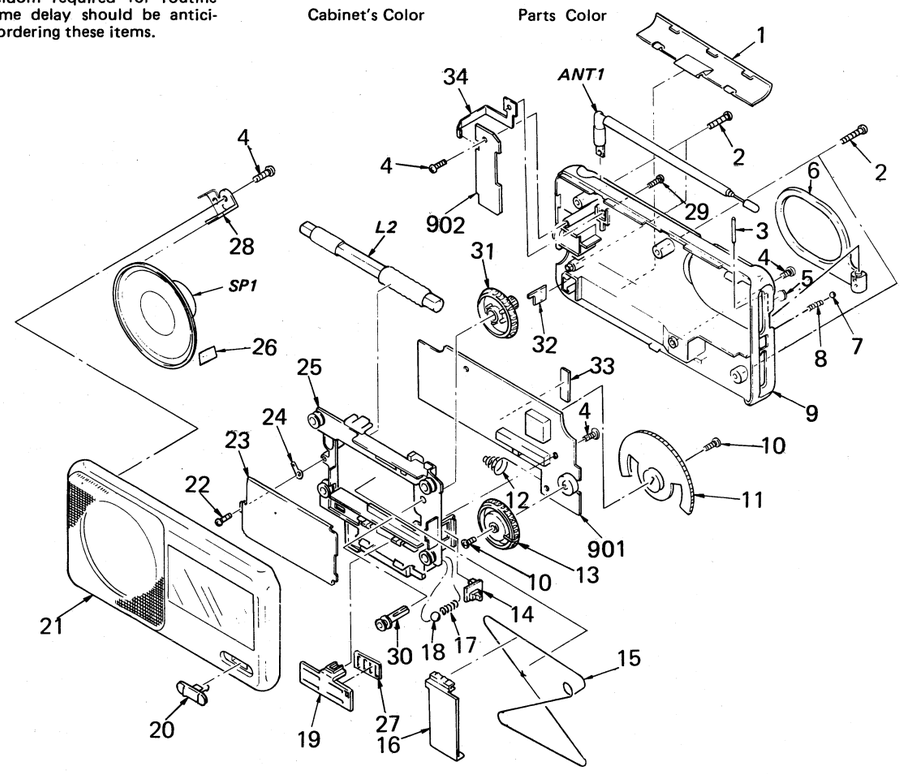


# SECTION 5
# EXPLODED VIEW

**NOTE:**

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts Color

(1)




| No. | Part No. | Description | Remarks |
|---|---|---|---|
| 1 | 3-900-008-01 | LID, BATTERY CASE | |
| 2 | 7-685-649-79 | SCREW +P 3X14 TYPE2 NON-SLIT | |
| 3 | 3-900-016-01 | SHAFT (HANDLE) | |
| 4 | 7-685-647-79 | SCREW +P 3X10 TYPE2 NON-SLIT | |
| 5 | *3-900-022-01 | CUSHION, HANDLE | |
| 6 | 3-900-017-01 | HANDLE | |
| 7 | 7-671-158-01 | BALL, STAINLESS (2.5 DIA) | |
| 8 | 3-900-013-01 | SPRING (A) | |
| 9 | 3-900-011-01 | CABINET (REAR) | |
| 10 | 3-880-990-00 | SCREW (1.7X3), FLAT, (+) SPECIAL | |
| 11 | *3-900-031-01 | GEAR, VC | |
| 12 | 3-892-818-01 | SPRING, BATTERY (-) | |
| 13 | X-3900-007-1 | KNOB, VOLUME | |
| 14 | 3-900-029-01 | KNOB (TONE) | |
| 15 | 9-911-825-52 | STRING, DIAL | |
| 16 | 3-900-020-01 | (UK).....POINTER | |
| | 3-900-020-11 | (AEP,French)...POINTER | |
| 17 | 3-898-910-01 | SPRING, COMPRESSION | |
| 18 | 7-671-112-11 | BALL, STEEL | |
| 19 | *3-900-015-01 | SLIDER | |
| 20 | 3-900-014-01 | (WHITE)...KNOB (BAND) | |
| | 3-900-014-11 | (BLACK)...KNOB (BAND) | |
| | 3-900-014-21 | (RED).....KNOB (BAND) | |

| No. | Part No. | Description | Remarks |
|---|---|---|---|
| 21 | X-3900-009-1 | (UK;WHITE)...CABINET, FRONT | |
| | X-3900-009-2 | (UK;BLACK)...CABINET, FRONT | |
| | X-3900-009-3 | (UK;RED).....CABINET, FRONT | |
| | X-3900-011-1 | (AEP,French;WHITE)...CABINET, FRONT | |
| | X-3900-011-2 | (AEP,French;BLACK)...CABINET, FRONT | |
| | X-3900-011-3 | (AEP,French;RED).....CABINET, FRONT | |
| 22 | 7-685-133-19 | SCREW +P 2.6X6 TYPE2 SLIT | |
| 23 | *3-900-019-01 | PLATE, BACK | |
| 24 | 7-623-507-01 | LUG, 2.6 | |
| 25 | X-3900-008-1 | CASSIS | |
| 26 | *3-898-518-01 | CUSHION (A) | |
| 27 | *3-898-911-01 | PLATE, CLICK | |
| 28 | 3-900-021-01 | CLAW, SPEAKER | |
| 29 | 7-682-547-04 | SCREW +B 3X6 | |
| 30 | *3-900-018-01 | SHAFT, TUNING | |
| 31 | 3-900-032-01 | KNOB (TUNE) | |
| 32 | 3-900-023-01 | TERMINAL BOARD, BATTERY (+) | |
| 33 | 3-892-935-11 | PLATE, GROUND | |
| 34 | *3-900-028-01 | PLATE, CONTACT, ANTENNA | |
| 901 | *A-3670-033-A | (AEP,UK)...PC BOARD ASSY, MAIN | |
| | *A-3670-036-A | (French)...PC BOARD ASSY, MAIN | |
| 902 | *1-626-690-11 | PC BOARD, JACK | |
| ANT1 | 1-501-362-11 | ANTENNA, TELESCOPIC | |
| L2 | 1-402-382-11 | ANTENNA, FERRITE-ROD (LW/MW) | |
| SP1 | 1-503-684-11 | SPEAKER | |



# SECTION 6
# ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| 901 | *A-3670-033-A | (AEP,UK)...PC BOARD ASSY, MAIN | | | |
| | *A-3670-036-A | (French)...PC BOARD ASSY, MAIN | | | |
| 902 | *1-626-690-11 | PC BOARD, JACK | | | |
| ANT1 | 1-501-362-11 | ANTENNA, TELESCOPIC | | | |
| BPF | 1-235-171-00 | FILTER, BAND PASS | | | |
| C4 | 1-161-039-00 | CERAMIC | 0.001MF | 10% | 25V |
| C5 | 1-102-960-00 | CERAMIC | 24PF | 5% | 50V |
| C6 | 1-102-958-00 | CERAMIC | 20PF | 5% | 50V |
| C7 | 1-102-960-00 | CERAMIC | 24PF | 5% | 50V |
| C8 | 1-162-681-11 | CERAMIC | 3PF | 0.25PF | 50V |
| C9 | 1-109-628-00 | MICA | 160PF | 5% | 500V |
| C10 | 1-123-875-11 | ELECT | 10MF | 20% | 50V |
| C11 | 1-101-004-00 | CERAMIC | 0.01MF | | 50V |
| C12 | 1-123-875-11 | ELECT | 10MF | 20% | 50V |
| C13 | 1-101-004-00 | CERAMIC | 0.01MF | | 50V |
| C14 | 1-102-973-00 | CERAMIC | 100PF | 5% | 50V |
| C15 | 1-101-004-00 | CERAMIC | 0.01MF | | 50V |
| C16 | 1-102-976-00 | CERAMIC | 180PF | 5% | 50V |
| C17 | 1-161-055-00 | CERAMIC | 0.022MF | 10% | 25V |
| C18 | 1-126-094-11 | ELECT | 4.7MF | 20% | 35V |
| C19 | 1-123-875-11 | ELECT | 10MF | 20% | 50V |
| C20 | 1-126-094-11 | ELECT | 4.7MF | 20% | 35V |
| C21 | 1-161-055-00 | CERAMIC | 0.022MF | 10% | 25V |
| C22 | 1-162-851-11 | CERAMIC | 0.1MF | 20% | 16V |
| C23 | 1-161-039-00 | CERAMIC | 0.001MF | 10% | 25V |
| C24 | 1-161-051-00 | CERAMIC | 0.01MF | 20% | 25V |
| C25 | 1-161-051-00 | CERAMIC | 0.01MF | 20% | 25V |
| C26 | 1-123-875-11 | ELECT | 10MF | 20% | 50V |
| C27 | 1-124-135-00 | ELECT | 470MF | 20% | 6.3V |
| C28 | 1-162-851-11 | CERAMIC | 0.1MF | 20% | 16V |
| C29 | 1-126-176-11 | ELECT | 220MF | 20% | 10V |
| C30 | 1-161-021-11 | CERAMIC | 0.047MF | 10% | 25V |
| C31 | 1-101-004-00 | CERAMIC | 0.01MF | | 50V |
| CF1, CF2 | 1-567-097-61 | FILTER, CERAMIC, 10.7MHz (two filters included) | | | |
| CT5 | 1-141-245-00 | CAP, VAR, TRIMMER | | | |
| CT6 | 1-141-245-00 | CAP, VAR, TRIMMER | | | |
| CT1-4, CV1 | 1-151-429-00 | CAP, TUNING, POLYETHYLENE | | | |

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| D1 | 8-719-815-55 | DIODE 1S1555 | | | |
| D2 | 8-719-815-55 | DIODE 1S1555 | | | |
| IC1 | 8-752-030-15 | IC CXA1019M | | | |
| J1 | 1-563-836-21 | JACK, EAER PHONE | | | |
| J2 | 1-507-954-11 | JACK, EXTERNAL POWER | | | |
| L1 | 1-410-320-11 | INDUCTOR 2.2UH | | | |
| L2 | 1-402-382-11 | ANTENNA, FERRITE-ROD (LW/MW) | | | |
| L3 | 1-426-014-00 | COIL, FM RF | | | |
| L4 | 1-422-131-00 | COIL, FM OSCILLATION | | | |
| L5 | 1-406-028-00 | COIL, OSC (LW/MW) | | | |
| Q1 | 8-729-194-57 | TRANSISTOR 2SC945-P | | | |
| R1 | 1-249-437-11 | CARBON | 47K | 5% | 1/4W |
| R2 | 1-249-423-11 | CARBON | 3.3K | 5% | 1/4W |
| R3 | 1-247-854-11 | (French)...CARBON | 9.1K | 5% | 1/4W |
| R3 | 1-249-427-11 | (AEP,UK)...CARBON | 6.8K | 5% | 1/4W |
| R5 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W |
| R6 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W |
| R7 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W |
| R8 | 1-249-433-11 | CARBON | 22K | 5% | 1/4W |
| R9 | 1-249-432-11 | CARBON | 18K | 5% | 1/4W |
| R10 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W |
| R11 | 1-249-401-11 | CARBON | 47 | 5% | 1/4W |
| R12 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| RV1 | 1-238-241-11 | RES, VAR, CARBON 50K (VOL/POWER) | | | |
| S1 | 1-571-610-11 | SWITCH, SLIDE (BAND) | | | |
| S2 | 1-552-370-00 | SWITCH, SLIDE (TONE) | | | |
| SP1 | 1-503-684-11 | SPEAKER | | | |
| T1 | 1-403-163-00 | CERAMIC FILTER (455kHz) | | | |

ACCESSORY

| | |
|---|---|
| 3-786-151-11 | MANUAL, INSTRUCTION (ENGLISH/FRENCH/GERMAN) |
| 3-786-151-41 | (AEP)...MANUAL, INSTRUCTION (SPANISH/DUTCH/SWEDISH/ITALIAN/PORTUGUESE) |

9-953-385-11

Sony Corporation
Audio Group

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